

## CLAIMS

1. A communication apparatus used in a communication system using MIMO, comprising:

a reception section that receives information indicating  
5 the number of effective eigenvalues, said number of effective eigenvalues being the number of eigenvalues greater than a predetermined threshold at a communicating party;

Number of multiplex sequences control section that determines the number of multiplex sequences based on the number  
10 of effective eigenvalues, and arranges transmission data in the number of multiplex sequences; and

a transmission section that transmits the transmission data of each sequence via different transmission streams by space-time coding.

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2. The communication apparatus according to claim 1, wherein the number of multiplex sequences control section increases the number of multiplex sequences of the transmission data as the number of the effective eigenvalues increase.

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3. The communication apparatus according to claim 1, wherein the transmission section controls a space-time coding method based on the number of effective eigenvalues.

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4. A communication method performing a communication using MIMO between two communication apparatuses, the method comprising the steps of:

in a first communication apparatus, forming a predetermined directivity by array antennas, and transmitting a signal from each antenna to a second communication apparatus;

in the second communication apparatus, calculating  
5 an eigenvalue by performing eigenvalue calculation using a received signal, calculating the number of effective eigenvalues, said number of effective eigenvalues being the number of eigenvalues greater than a predetermined threshold, and transmitting information containing the number of effective  
10 eigenvalues to the first communication apparatus;

in the first communication apparatus, controlling the number of multiplex sequences of the transmission data based on the number of effective eigenvalues, and transmitting the transmission data of each sequence via different transmission  
15 streams by space-time coding to the second communication apparatus.